

CLAIMS

[1] A control system for a floating mobile object, wherein,
the floating mobile object comprises:

a main body part that can be considered as a single
5 rigid body constituting a part of the floating mobile object;
an effector part for generating a thrust for the
floating mobile object; and

a thrust transfer gate for dynamically connecting
the main body part and the effector part, the thrust transfer gate
10 being adapted to be able to actually measure a thrust from the
effector part acting on the main body part, and

a measured value for the thrust from the thrust transfer
gate is used to obtain a thrust command to the effector part.

15 [2] The control system for a floating mobile object according
to claim 1, wherein,

the main body part includes acceleration measurement means
capable of measuring an acceleration of the main body part,

the thrust transfer gate includes force/torque measurement
20 means capable of measuring a force/torque applied between the main
body part and the effector part, and

the thrust command to the effector part is obtained by using:

a target acceleration trajectory command obtained
by converting a target position/velocity trajectory command from
25 an operator;

an output from the acceleration measurement means of the main body part; and

an output from the force/ torque measurement means from the thrust transfer gate.

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[3] The control system for a floating mobile object according to claim 1, wherein,

the thrust transfer gate includes force/torque measurement means capable of measuring a force/torque applied between the main
10 body part and the effector part,

the main body part is dynamically connected only to the thrust transfer gate, the main body part being adapted to receive substantially all forces acting thereon via the effector part and the thrust transfer gate, and

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the thrust command to the effector part is obtained by using:

a target acceleration trajectory command obtained by converting a target position/velocity trajectory command from an operator; and

an output from the force/torque measurement means
20 from the thrust transfer gate.

[4] The control system for a floating mobile object according to claim 2 or 3, wherein,

the main body part further includes inclination angle
25 measurement means capable of measuring an inclination of the main

body part, and

the thrust command to the effector part is obtained by additionally using an output from the inclination angle measurement means of the main body part.

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[5] A control system for a floating mobile object, wherein, the floating mobile object is virtually in an arithmetical manner divided into:

a main body part that can be considered as a single
10 rigid body constituting a part of the floating mobile object; and
an effector part for generating a thrust for the floating mobile object,

the floating mobile object includes acceleration measurement means capable of an acceleration of the floating mobile
15 object, and

an output from the acceleration measurement means is used to arithmetically estimate a force/torque from the virtual thrust transfer gate to obtain a thrust command to the effector part.

20 [6] The control system for a floating mobile object according to claim 5, wherein,

the floating mobile object further includes inclination angle measurement means capable of measuring an inclination of the floating mobile object, and

25 the thrust command to the effector part is obtained by using

outputs from the inclination angle measurement means and the acceleration measurement means to arithmetically estimate the force/torque from the virtual thrust transfer gate.

5 [7] A floating mobile object acceleration sensing system for sensing an acceleration of a floating mobile object, wherein, the floating mobile object comprises:

a main body part that can be considered as a single rigid body constituting a part of the floating mobile object;

10 an effector part for generating a thrust for the floating mobile object; and

a thrust transfer gate for dynamically connecting the main body part and the effector part, the thrust transfer gate being adapted to be able to measure a thrust from the effector part acting on the main body part,

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the thrust transfer gate includes force/torque measurement means capable of actually measuring a force/torque applied between the main body part and the effector part,

the main body part is dynamically connected only to the thrust transfer gate, the main body part being adapted to receive substantially all forces acting thereon via the effector part and the thrust transfer gate, and

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an estimated acceleration value for the main body part is obtained by using an output from the force/torque measurement means from the thrust transfer gate.

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[8] The floating mobile object acceleration sensing system according to claim 7, wherein,

the main body part further includes inclination angle
5 measurement means capable of measuring an inclination of the main
body part, and

the estimated acceleration value for the main body part
is obtained by additionally using an output from the inclination
angle measurement means of the main body part.